increased pain during walking compared to active individuals. Further research is required to investigate subgroups in a clinical population with GTPS.

48 HAMSTRING MUSCLE ACTIVATION DURING SINGLE LEG JUMP AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH A SEMITENDINOSUS GRAFT

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Introduction Few studies have used electromyography (EMG) to assess hamstrings function after anterior cruciate ligament reconstruction (ACLR). The purpose of this study was to identify inter-limb differences in muscle activity of the semitendinosus (ST) and the long head of the biceps femoris (BFLH) after ACLR while accounting for the muscles' mass, as measured with ultrasound.

Materials and Methods Twenty athletes (age 18–28) who had undergone ACLR with a graft harvested from ST partook in the study. Electrodes were placed over the midbelly of ST and BFLH bilaterally. Peak muscle activity was measured during three good trials of a single leg jump and normalized to the signal obtained during a maximal voluntary isometric contraction. Ultrasound was used to measure muscle mass. Processing was conducted in Visual 3D, while mixed model statistical analysis was performed with Jamovi.

Results Peak activation of BFLH was higher than ST across both sides ($p<0.001$) and activation of both muscles was generally higher on the injured vs. uninjured side ($p<0.001$). Muscle mass of ST on the injured side was negatively correlated with muscle activity, while the correlation was positive on the uninjured side (interaction; $p<0.001$). No correlation was found between muscle mass and BFLH muscle activation (n.s.).

Conclusion The use of ST for ACLR not only has a significant effect on the muscle's mass but also influences muscle contraction levels of the injured limb. Prospective intervention studies are needed to determine whether specific post-surgical intervention may positively influence long-term muscle mass and activation, and lower limb function.

49 THE SPRINT MECHANICS ASSESSMENT SCORE (S-MAS): A RELIABLE TOOL ASSESSING IN-FIELD SPRINT RUNNING MECHANICS ASSOCIATED WITH HAMSTRING STRAIN INJURIES

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Introduction Qualitative movement screening tools have been developed across several activities, aiming to identify mechanical patterns associated with potential injury risk. Although sprint running mechanics are thought to influence hamstring strain injuries (HSI), there are currently no field-based screening tools available allowing quick assessment. Therefore, this study aimed to determine the intra- and inter-tester reliability of a novel, easy-to-use qualitative screening tool assessing sprint running mechanics (The Sprint Mechanics Assessment Score [S-MAS]).

Materials and Methods The S-MAS is a 12-item scoring tool, developed following a literature review of biomechanical parameters associated with HSI and consultation with sprint coaches.

Slow-motion videos were collected from 36 elite football players (18 female, 18 male) performing maximal velocity sprints.

Two assessors, blinded to each other's results, independently scored all videos. One assessor (blinded to testing session one scores) scored the same videos in a randomised order 1 week later.

Results Interclass correlation coefficients showed good intra-tester (ICC = .828, 95%CI = .688-.908) and inter-tester (ICC = .799, 95%CI = .642-.892) reliability for overall S-MAS with a standard error of 1 point. Intra-tester and inter-tester percentage agreements for individual items ranged from 75–88% and 66–89% respectively. No significant sex ($p = .597$) or inter-limb ($p = .094$) differences were observed for overall score.

Conclusion The S-MAS is a reliable tool assessing sprint running mechanics in both male and female footballers. The easy-to-use nature of the S-MAS means it can be integrated into practice, providing an in-field method of screening sprint mechanics commonly associated with HSI.

50 THE ASSOCIATION BETWEEN THE SPRINT MECHANICS ASSESSMENT SCORE (S-MAS) TO RETROSPECTIVE AND PROSPECTIVE HAMSTRING STRAIN INJURIES IN ELITE FOOTBALL PLAYERS

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Introduction Sprint running mechanics are thought to be a risk factor for Hamstring Strain Injuries (HSI). However, there is limited evidence to support this association, which may be explained by the lack of in-field assessment methods to evaluate sprint running mechanics.

This study aimed to investigate whether a new qualitative screening tool, the Sprint Mechanics Assessment Score (S-MAS), can identify differences in running mechanics between players who have sustained a HSI in the last 12 months (Prior HSI), those prospectively sustaining a new HSI, and controls.

Materials and Methods Maximal velocity sprint running videos (240fps) were collected from 79 elite football players (18 female, 61 male) in the English Football League. A blinded assessor scored all videos using the S-MAS (12-point qualitative screening tool for sprint mechanics).

Mann-Whitney U tests were used to compare S-MAS between injured groups (Prior HSI, n=12 and New HSI, n=3) to sex-matched controls (n=41).

Results Mean S-MAS for the Prior HSI group (6.2, SD 1.9) were significantly greater than controls (4.4, SD 2.4) ($p <.05$, Effect size (ES) = 0.76). Players sustaining a new HSI also displayed greater S-MAS scores compared to controls (mean

6.3, SD 0.6, ES = 0.8), however this was non-significant (p = .187).

Conclusion S-MAS scores are higher in footballers with HSI's compared to controls, suggesting sub-optimal sprint mechanics are associated with previous and possibly future HSI. The easy-to-use nature of the S-MAS means screening sprint running mechanics can be simply integrated into routine practice, potentially identifying footballers at HSI risk.

51 FACTORS ASSOCIATED WITH GOOD RECOVERY FROM ACHILLES TENDON RUPTURE AT 1 YEAR POST RUPTURE

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Introduction Achilles tendon rupture (ATR) leads to long-term structural and functional impairments (1,2). Currently, the predictors of good recovery after ATR are poorly understood. Thus, we applied multivariable linear regression analysis to identify factors that explain good recovery.

Materials and Methods A total of 35 unilateral ATR patients (6 females) were recruited. Structural, mechanical, and neuromuscular parameters were measured 1-year after rupture. Multivariable linear regression was used to predict differences between limbs (Δ) in: 1) tendon length at rest, 2) non-uniformity of tendon displacement, and 3) flexor hallucis longus (FHL) surface electromyography (EMG) activation% during isometric submaximal contraction. Relevant covariates were included in the models based on previous knowledge (1,3–5). We also investigated the relative contribution of FHL to total triceps surae EMG activity during submaximal contraction between limbs.

Results Medial Gastrocnemius (MG)-tendon Δstiffness was significantly associated with both ΔMG (p=0.007) and Δlateral gastrocnemius (p=0.030) subtendon lengths. FHL EMG% difference between limbs was associated with MG (p=0.003) and soleus (p=0.040) Δsubtendon lengths. The relative contribution of MG to plantarflexion was lower in the injured limb with a mean difference of 0.061 (95%CI [0.02–1.0]; p=0.007). This was accompanied by an increased FHL contribution in the injured limb of -0.061 (95%CI [-1.06- -0.016]; p=0.011).

Conclusions The increased contribution of FHL appears to counteract deficits caused by the elongated tendon and smaller contribution of MG in the injured limb. Excessive lengthening of the tendon post-rupture could result in lower stiffness, reducing maximal isometric force production capacity, and worsening the ramifications after ATR.

55 WHAT DO UPPER-EXTREMITY PHYSICAL PERFORMANCE TESTS ACTUALLY MEASURE? INSIGHTS FROM AN ELECTROMYOGRAPHICAL STUDY

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Introduction Physical performance tests (PPTs) focus on multi-joint evaluations in which the athlete performs an activity that represents some aspects of athletic function. Evaluating the electromyographical (EMG) demands of those PPTs enables clinicians to select appropriate PPTs for their athletes.

Material and Methods Thirty asymptomatic overhead athletes participated in this descriptive laboratory study. Four PPTs (Y-Balance Test - Upper Quarter (YBT-UQ), Closed Kinetic Chain Upper Extremity Stability Test (CKCUEST), Upper Limb Rotation Test (ULRT) and Shoulder Endurance Test (SET)) were evaluated using surface EMG on both dominant and non-dominant sides to measure muscle activity of upper (UT), middle (MT), and lower (LT) trapezius, serratus anterior (SA), infraspinatus (IS), and posterior deltoid (PD).

Results During YBT-UQ performance on both sides, the supporting hand showed high SA activity levels (range: 51–94% MVIC) during all reach directions while IS was most active when supporting the superolateral reach (range: 92 –129% MVIC). For the reaching hand, SA was most active (range: 46–83%MVIC). During the CKCUEST, all muscles were moderately to highly active, with SA (range: 64 – 87%MVIC) and IS (range: 42 – 85%MVIC) being the most active ones in both moving and supporting hand. Moderate to high activity was recorded for all muscles on both sides during the ULRT. For the SET, muscle activity progressively increased with increasing speed for both dominant and non-dominant performance.

Conclusion Our results provide specific EMG based information which allows clinicians to better understand PPT performance, enhancing selection of appropriate PPTs that match their patients' needs to return to sport.

59 DISORDERED EATING, EXERCISE ADDICTION AND MUSCLE DYSMORPHIA MAY PREDICT LOW ENERGY AVAILABILITY IN FEMALE ATHLETES

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Low energy availability (LEA) describes a complex state of insufficient energy intake to support normal physiological function, after exercise energy expenditure has been accounted for. LEA is a common challenge in athletes and can stem from a range of causes. The aim of this study was to compare the occurence of disordered eating (DE) as well as other less studied traits, e.g. exercise addiction (EA) and muscle dysmorphia (MD), in Icelandic female athletes considered at risk of LEA vs not.

Elite and sub-elite female athletes (n=60, age 24.1±7.8) from various sport disciplines completed the Low Energy Availability in Female Questionnaire (LEAF-Q), Eating Disorder Examination – Questionnaire Short (EDE-QS), Exercise Addiction Inventory (EAI), and Muscle Dysmorphic Disorder Inventory (MDDI).

Average total LEAF-Q score was 7.8±4.7 and 46.7% had a score ≥8 (considered at risk of LEA). According to the other questionnaires 20% were at risk for EA, 13.3% for MD and 11.7% for DE. Athletes at risk of LEA had higher EAI (21.6 ±3.5 vs 18.2±4.5, p=0.002), EDE-QS (8.6±6.9 vs. 4.5±5.5, p=0.014) and MDDI scores (31.9±7.6 vs. 27.1±7.5, p=0.017) compared to those not at risk. The proportion of athletes at risk of EA was higher in the group at risk of LEA vs not (32.1 vs 9.4%, p=0.023) but observed differences in